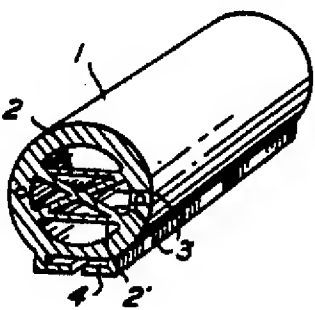




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification 4 : B60R 19/18, B63B 59/02</p>	<p>A1</p>	<p>(11) International Publication Number: WO 86/ 00051 (43) International Publication Date: 3 January 1986 (03.01.86)</p>
<p>(21) International Application Number: PCT/KR85/00013 (22) International Filing Date: 4 June 1985 (04.06.85) (31) Priority Application Number: 84/3199 (32) Priority Date: 8 June 1984 (08.06.84) (33) Priority Country: KR (71)(72) Applicant and Inventor: LEE, Sang, Choon [KR/KR]; 360-26, Shindae-bang-dong, Dongjak-ku, Seoul 151 (KR). (81) Designated States: AT (European patent), AU, BE (European patent), BR, CH (European patent), DE (European patent), FR (European patent), GB (European patent), IT (European patent), JP, LU (European patent), NL (European patent), NO, SE (European patent), US.</p>	<p>Published With international search report.</p>	
<p>(54) Title: RUBBER BUMPER</p>		
		
<p>(57) Abstract</p>		
<p>The level plates and X-shape plate are formed inside of round or elliptical rubber or elastic plastic tube integrally so as said plates produce elasticity when impacted by means of absorbing (buffing) the impacts effectively.</p>		

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DESCRIPTION

RUBBER BUMPER

TECHNICAL FIELD

This invention relates to a rubber bumper in which the
5 buffing structure is integrally formed inside of the round or elliptical rubber tube in order to enhance the buffing action.

BACKGROUND ART

Is is well known that the rubber or elastic plastics
10 show buffing actions by means of forming round shape, but in this case, the life of buffing action is short, namely, the rubber or elastic plastics become not to buff the impacts by distortion of the round shape by use.

DISCLOSURE OF THE INVENTION

15 This invention relates to a rubber bumper in which the buffing structure is integrally formed inside of the round or elliptical rubber tube to enhance the buffing action and to return to original round or elliptical shape right after the impact. In the present invention, the X-shape
20 structure is formed inside of the round or elliptical rubber tube integrally in order to keep the action buffing strong impact for a long term instead of setting the spring.

The structures will be described according to Fig. 1, 2,
25 3, 4 and 5 as follows:

The rubber bumpers as shown in Fig. 1, 2, 3, 4 and 5 are short length, but the length of the rubber bumper can be decided as occasion demands, and both ends of the rubber

bumper are shut closely as shown in Fig. 7 as occasion demands.

In Fig. 1, the rubber plates(2),(2') are integrally formed in parallel with each other up and down inside of the rubber tube(1) and then the X-shape rubber plate(3) is integrally set between said rubber plates(2) and (2'), and installing space(4) is formed at down part of said tube. In aforementioned rubber tube(1), said tube's shape can be round or elliptical and can be made of elastic plastic.

10 In aforementioned tube(1)(bumper), as shown in Fig. 6, the tube(1) is distorted elliptically as shown by interval(W) when the tube(1) is impacted, and the said level plates(2),(2') and X-shape plate(3) are simultaneously extended so as not to permit said tube(1) to be easily distorted and as to keep elasticity of the tube(1), so that
15 said X-shape plate(3) can be extended equally in left and right directions without unbalanced extension so as to achieve balanced buffing of impacts.

As shown in Fig. 2, the buffing parts(5),(5') of said tube(1) can be formed side by side for the purpose of using to ships or wharfs. For this purpose, the contacting part(6), the connecting plates(7),(7') and the installing space(8) are integrally formed, and if occasion demands, said buffing parts(5) can be increased for wide face.

25 In the rubber or plastic elliptical bumper as shown in Fig. 3, said level plate(10) and said X-shape plate(11) are integrally formed in radial state inside of said rubber or plastic tube, further, as shown in Fig. 4, said

level plate(12) and X-shape plate are formed thickly, but the longitudinal connecting plates(14),(14') are formed thinly in order to absorb the impacts equally, and the tube-shape structures(15),(15') are integrally formed inside
5 of said rubber or elliptical tube for the purpose of equal extension and contraction, elasticity of said tube, furthermore, as shown in Fig. 5, the buffing structures can be formed by round tube(16), small round tubes(17),(17') and radial plate(longitudinally formed)(18).

10 The rubber or plastic(elastic) can be selected from aforementioned formations as occasion demands. Therefore, the rubber or elastic plastic bumper can protect the body of automobiles or ships by virtue of its excellent action of buffing(absorbing) impacts. Moreover, the bumper
15 according to the present invention can be used to the bottom of the gate of dam so as to prevent leakage of water.

As seen from aforementioned structures of the bumper of the present invention, this bumper can be utilized for various fields.

20 BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of the invention showing partial sectional view,

Fig. 2 is a perspective view showing double tube of the invention,

25 Fig. 3 is a perspective view of elliptically formed tube, and showing the radially formed buffing structures,

Fig. 4 is a perspective view showing the structures as

4

formed by the longitudinal round tube and radial plate,

Fig. 5 is a perspective view showing the structures as formed by the longitudinal small round tubes and the radial connecting plate,

- 5 Fig. 6 is a side view showing the distorted state of of the invention when impacted,

Fig. 7 is a sectional view of the bumper in which both ends are closed up tightly in order to produce the action of air compressing,

- 10 Fig. 8 is an example showing the use of the invention to automobile and

Fig. 9 is a side view showing the uses of the invention to the ship and wharf.

CLAIM

1. A rubber bumper as characterized in forming the level rubber plates and X-shape plate inside of the rubber tube integrally and forming the installing space at down part of said tube.

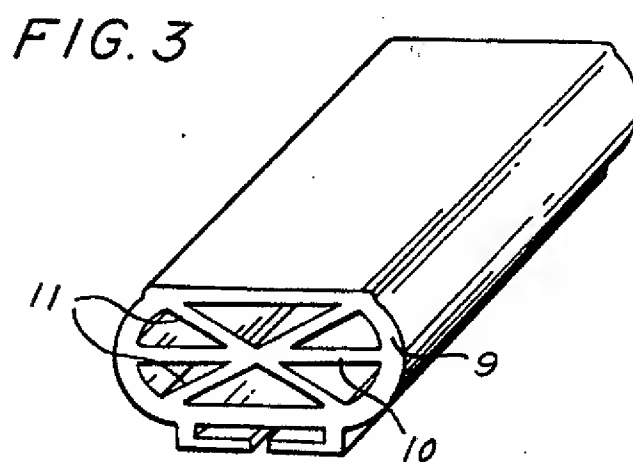
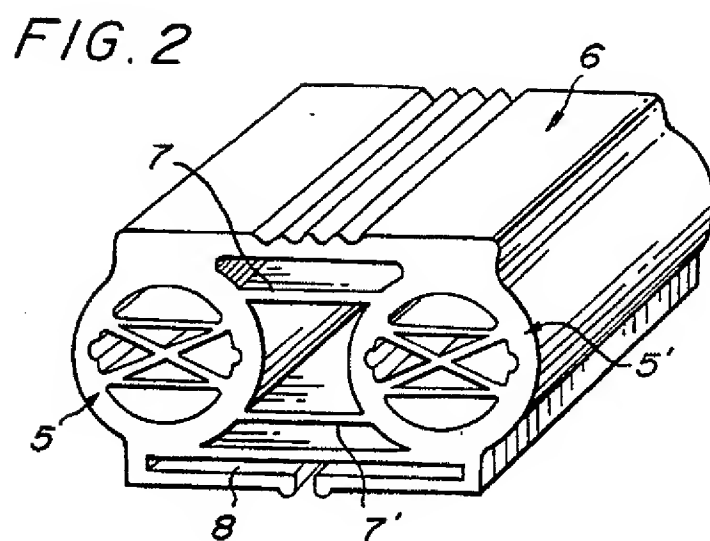
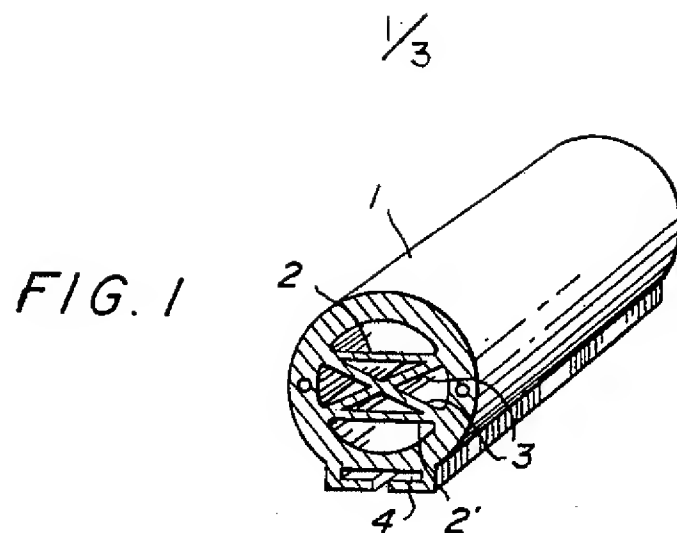
2. A rubber bumper according to Claim 1 in which plural bumpers of the invention are formed in one and having wide contacting surfaces together with said level plates and X-shape plate.

3. A rubber bumper according to Claim 1 in which rubber tube is formed elliptically and said level plates and X-shape plate are integrally formed inside of said elliptical tube.

4. A rubber bumper according to Claim 1 in which both ends of said tube are closed up tightly in order to produce the action of air compressing.

5. A rubber bumper according to Claim 1 in which the longitudinal round tube and the radial plate are formed in said tube.

6. A rubber bumper according to Claim 1 in which plural small longitudinal tubes are integrally formed outside of said longitudinal round tube and the radial plate is formed inside of said longitudinal round tube.



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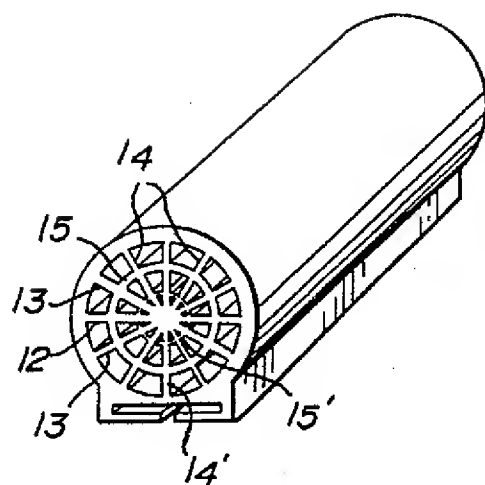


FIG. 4

FIG. 6

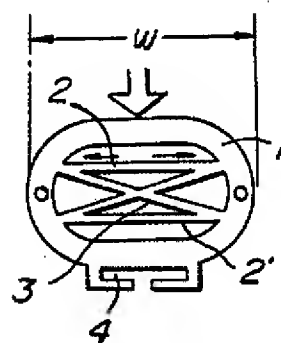


FIG. 5

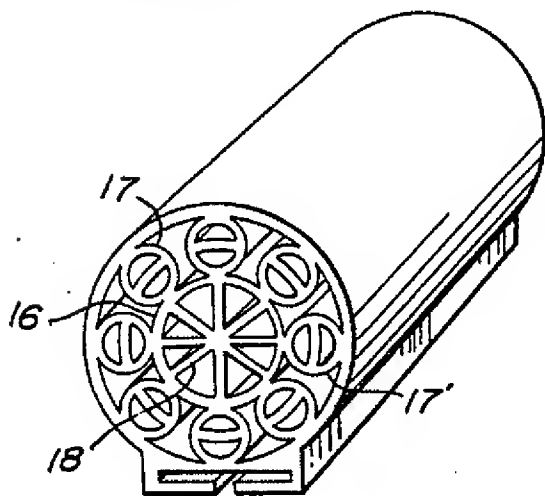
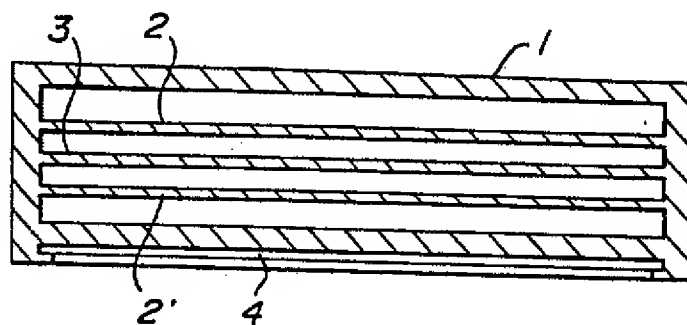


FIG. 7



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FIG. 8

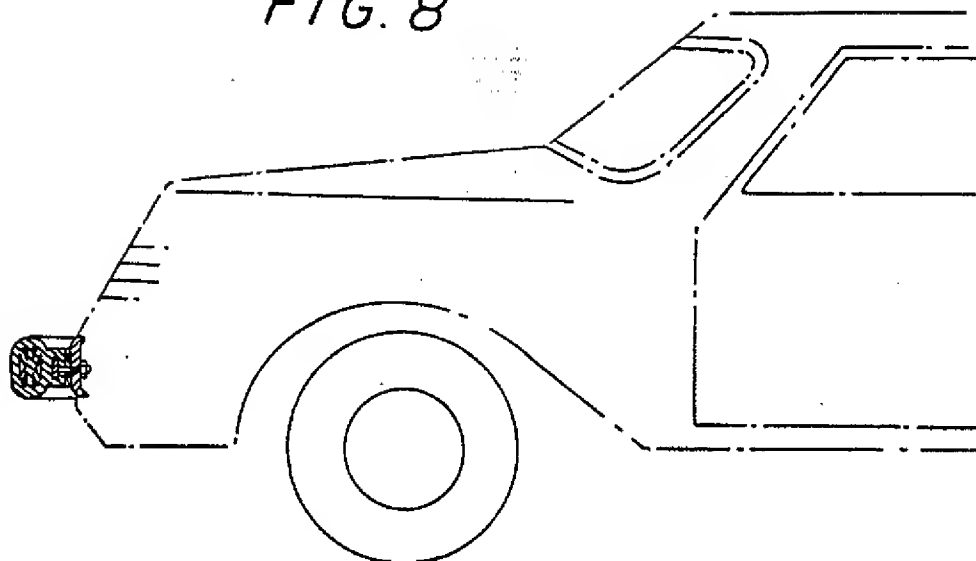
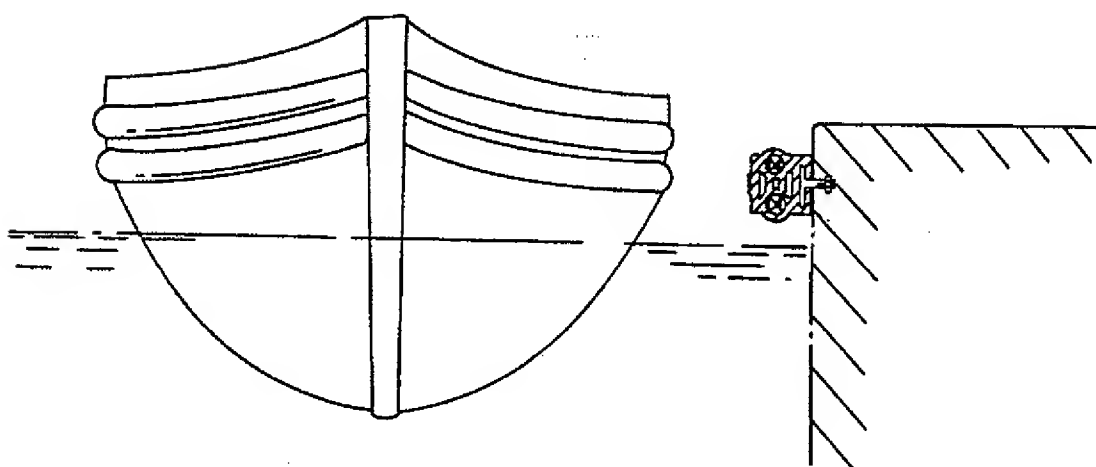


FIG. 9



INTERNATIONAL SEARCH REPORT

International Application No PCT/KR 85/00013

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) * According to International Patent Classification (IPC) or to both National Classification and IPC IPC ⁴ B 60 R 19/18, B 63 B 59/02																	
II. FIELDS SEARCHED <div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black; margin: 5px 0;">Minimum Documentation Searched *</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 30%; border-bottom: 1px solid black;">Classification System</th> <th style="border-bottom: 1px solid black;">Classification Symbols</th> </tr> <tr> <td style="padding: 5px;">Int.Cl.⁴</td> <td style="padding: 5px;">B 60 R 19/00, B 63 B 59/00, F 16 F 1/00</td> </tr> </table> <div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black; margin: 5px 0;">Documentation Searched other than Minimum Documentation to the extent that such Documents are included in the Fields Searched *</div>			Classification System	Classification Symbols	Int.Cl. ⁴	B 60 R 19/00, B 63 B 59/00, F 16 F 1/00											
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III. DOCUMENTS CONSIDERED TO BE RELEVANT * <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%; border-bottom: 1px solid black;">Category *</th> <th style="border-bottom: 1px solid black;">Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²</th> <th style="width: 15%; border-bottom: 1px solid black;">Relevant to Claim No. ¹³</th> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">X</td> <td style="padding: 5px;">GB, A, 1 562 254 (PIRELLI) 05 March 1980 (05.03.80), see fig. 2.</td> <td style="text-align: center; vertical-align: top; padding: 5px;">(1,2)</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">X</td> <td style="padding: 5px;">FR, A, 1 430 309 (TREMBLEY) 02 May 1966 (02.05.66), see fig. 3.</td> <td style="text-align: center; vertical-align: top; padding: 5px;">(1)</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">X</td> <td style="padding: 5px;">FR, A, 2 103 227 (GENERAL MOTORS) 07 April 1972 (07.04.72), see fig. 3,5.</td> <td style="text-align: center; vertical-align: top; padding: 5px;">(1)</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">A</td> <td style="padding: 5px;">US, A, 4 320 913 (KURODA) 23 March 1983 (23.03.83), see fig. 5-9,14. -----</td> <td style="text-align: center; vertical-align: top; padding: 5px;">(1-6)</td> </tr> </table>			Category *	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³	X	GB, A, 1 562 254 (PIRELLI) 05 March 1980 (05.03.80), see fig. 2.	(1,2)	X	FR, A, 1 430 309 (TREMBLEY) 02 May 1966 (02.05.66), see fig. 3.	(1)	X	FR, A, 2 103 227 (GENERAL MOTORS) 07 April 1972 (07.04.72), see fig. 3,5.	(1)	A	US, A, 4 320 913 (KURODA) 23 March 1983 (23.03.83), see fig. 5-9,14. -----	(1-6)
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<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>* Special categories of cited documents: ¹⁴</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"A" document member of the same patent family</p> </div> </div>																	
IV. CERTIFICATION <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-bottom: 1px solid black; padding: 5px;"> Date of the Actual Completion of the International Search 21 August 1985 (21.08.85) </td> <td style="width: 50%; border-bottom: 1px solid black; padding: 5px;"> Date of Mailing of this International Search Report 04 September 1985 (04.09.85) </td> </tr> <tr> <td style="border-bottom: 1px solid black; padding: 5px;"> International Searching Authority AUSTRIAN PATENT OFFICE </td> <td style="border-bottom: 1px solid black; padding: 5px;"> Signature of Authorized Officer </td> </tr> </table>			Date of the Actual Completion of the International Search 21 August 1985 (21.08.85)	Date of Mailing of this International Search Report 04 September 1985 (04.09.85)	International Searching Authority AUSTRIAN PATENT OFFICE	Signature of Authorized Officer 											
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Anhang zum internationalen Recherchenbericht über die internationale Patentanmeldung Nr.

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Annex to the International Search Report on International Patent Application No. PCT/KR 85/00013

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Im Recherchenbericht angeführtes Patentedokument Patent document cited in search report Document de brevet cité dans le rapport de recherche	Datum der Veröffentlichung Publication date Date de publication	Mitglied(er) der Patentfamilie Patent family member(s) Membre(s) de la famille de brevets	Datum der Veröffentlichung Publication date Date de publication
GB-A-1 562 254	05/03/1980	CH-A - 608 438 DE-A1- 2 711 277 ES-U - 228 167 ES-Y - 228 167 ES-Y1- 228 167 FR-A1- 2 361 247 FR-B1- 2 361 247 GB-A - 1 559 251 JP-A2-52 131 329	15/01/1979 10/11/1977 01/07/1977 01/12/1977 30/12/1977 10/03/1978 09/01/1981 16/01/1980 04/11/1977
FR-A-1 430 309	02/05/1966	None	
FR-A-2 103 227	07/04/1972	AU-A1- 31 271/71 CA-A1- 922 341 DE-A - 2 132 473 GB-A - 1 315 422 JP-B4-52 009 896 US-A - 3 694 018	18/01/1973 06/03/1973 27/01/1972 02/05/1973 19/03/1977 26/09/1972
US-A-4 320 913	23/03/1983	None	